STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

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SECRETARY

MEMO TO: Highway Design Branch Unit Heads

FROM: Debbie Barbour, PE
Highway Design Branch Manager

SUBJECT: Survey Control Data for Plan Sheets

DATE: January 28, 2003

With increased usage of GPS in construction staking, and the increased importance of right of way location, it has become necessary to document the survey and mapping control network established on each project. In order to provide this documentation, as of March 1, 2003, we will require the attached information to be included in the right of way plans. This information should be developed by the survey group responsible for establishing control (most often, NCDOT Location & Surveys Unit). The information will be included on sheets 1 C through 1 E in the plans and as discussed in the attachments.

- For Highway Design Branch in-house procedures, this information should be requested from Location & Surveys when property ties are requested. The location and name of the plan sheet layout should be included with the letter of request.
- For PEF projects (those developed through Design Services with a survey subcontractor), the prime should contract this work with the sub, to be completed following the development of the plan sheet layout.
- PEF firms must be willing to provide the electronic data to Location & Surveys website. Formats of data may differ depending upon the GPS calibration developed, but all data included in these examples must be present.
- Control data for all Design Branch projects (in-house or PEF) will be maintained on the Location & Surveys website.
- For further reference, please view the Powerpoint slideshow entitled "Control Sheet Powerpoint" at:
http://www.doh.dot.state.nc.us/preconstruct/highway/location/support/Manuals.htm

Thank you for your assistance in this matter. If you have any questions regarding this information, please contact Mr. Watson McNeil, PE, PLS, at 919-250-4112 or Mr. Emory Kincaid, PLS, at 919-250-4109.

DMB/mk
Attachments
cc w/att: Len Hill, PE
Emory Kincaid, PLS
Watson McNeil, PE, PLS

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RALEIGH NC

Required Survey Control Sheet Information

Sheet 1C

1) Graphics of project showing the primary GPS controls, with coordinates
2) Datum Description
3) Vicinity Map showing outer control network (HARN)
4) Notes (see Below)

Sheet 1D

5) Site Calibration or Mapping Transformation (May not be necessary on small projects)
6) Datum Description
7) Notes (see below)
8) Baseline Control may be added if space allows

Sheet 1E

9) Baseline data with Station and Offset to design alignment
10) Benchmark information with Station and Offset to design alignment
11) Datum Description
12) Notes (see below)

Notes (Items 4, 7, 12) – the same set of notes should appear on each page
For projects with site calibration:

1. The site calibration shown is based upon a network tied to the HARN (High Accuracy Reference Network) NAD 83/95 Adjustment. This calibration will allow the end user to work within the same coordinate system when using RTK (Real Time Kinematic) GPS and a local base station. If another such system such as VRS (Virtual Reference Station) is used, additional field ties may be needed to reduce possible errors, or biases.
2. The control data for this project can be found electronically by selecting "Project Control Data" at http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/

The files to be found are as follows:

*Project Number*_ ls_ gpscalib_ *Date of latest revision (yr ,month, day)*.html
Example u4026_ls_gpscalib_030101.html

*Project Number*_ ls_ wgs84_ *Date of latest revision (yr ,month, day)*.txt
Example u4026_ls_wgs84_030101.txt

*Project Number*_ ls_ local_ *Date of latest revision (yr ,month, day)*.txt
Example u4026_ls_local_030101.txt

*Project Number*_ ls_ baseline_ *Date of latest revision (yr ,month, day)*.txt
Example u4026_ls_baseline_030101.txt

The "wgs84" and "local" files are comma delimited and can be used to reproduce the site calibration for the end user's GPS equipment. If further information is needed, please contact the NCDOT Location & Surveys Unit.

For smaller projects not requiring a site calibration

1. Site calibration has not been provided for this project. If further information is needed, please contact the NCDOT Location & Surveys Unit.
2. The control data for this project can be found electronically by selecting "Project Control Data" at http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/

The files to be found are as follows:

*Project Number*_ ls_ baseline_ *Date of latest revision (yr ,month, day)*.txt
Example b4026_ls_baseline_030101.txt